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REMARKS

In response to the action, Applicants have prepared a § 1.132 declaration to address arguments presented concerning US Pat. No. 5,981,454 Small. Applicants respectfully request reconsideration in view of the declaration and the following remarks.

Applicants' attorney thanks the Examiner for the brief telephone interview. During the interview, the Examiner requested strong evidence regarding the definition of slurry. Applicants' attorney agreed to provide evidence from a top slurry expert along with published evidence referenced in the Small patent. The parties did not agree regarding the patentability of the invention.

The action rejects claims 1 to 4 as being unpatentable over Small (US Pat. No. 5,981,454) in view of Chopra (US Pat. No. 6,276,996) or Verhaverbeke (US Pat. No. 5,972,123) as evidenced by Grant & Hackh's Chemical Dictionary (page 121), Hawley's Condensed Chemical Dictionary (page 1066), Wang et al. (US Pat. No. 6,435,944), Held (US Pat. 6,509,270) and Merriam-Webster's Collegiate Dictionary (tenth edition, page 1107). Small discloses a post-polishing treatment solution that can be useful in a two-step polishing process—Col. 6, lines 4 to 6. In this process, the solution facilitates oxidizing the metal surface and “the subsequent abrasion of the oxide surface with an emulsion slurry”. Claim 1 includes a polishing solution useful for polishing and removing copper without abrasives. Unlike Applicants' abrasive-free claim 1, Small only oxidizes the metal surface and relies upon an emulsion slurry to remove copper. In an effort to rebut the assertion that the CMP emulsion slurry also applies to abrasive-free formulations, Applicants have provided the 132 declaration of Mr. Lee Cook. Mr.

Cook is an inventor of several polishing slurry inventions, familiar with the publications of Mr. Frank Kaufman and the author of several publications. Mr. Cook, an expert in the field of polishing consumables interprets the Small patent as requiring abrasive for its polishing slurries. Specific arguments contained in the Declaration for this are as follows: Mr. Cook's Declaration distinguishes the Small reference as follows:

1) That Small at column 6, lines 4 to 6 state: "This type of polishing relies on the oxidation of the metal surface and the subsequent abrasion of the metal oxide surface with an emulsion slurry." The term emulsion in this sentence refers to a multi-phase system and that the conventional usage of "emulsion slurry" in polishing terminology is to imply a solid or abrasive phase.

2) That the two-part oxidation of the metal surface with subsequent "abrasion" of Small at column 6, lines 4 to 6 also implies an abrasive.

3) That Small at column 6, lines 14 to 16 states that under ideal conditions, rate of metal oxide formation equals rate of oxide polishing. This statement implies that the chemical solution oxidizes the metal surface and that an abrasive removes the oxidized metal surface.

4) That at column 6, lines 34 to 36, Small describes a detailed polishing mechanism proposed by Kaufman, F.; J. Electrochem. Soc; 138(11), P 3460, 1991 ("Kaufman"). That in the paragraph bridging pages 3460 and 3461, Frank Kaufman uses the terms "absence of free abrasive" and "absence of added slurry" on an interchangeable basis.

5) Furthermore, the paragraph bridging pages 3460 and 3461 describes the mechanism of absence of free abrasive as hydrodynamically assisted wet etching rather than chemical-mechanical polishing. This places abrasive-free etching solutions outside the definition of polishing slurries.

The Declaration of Mr. Lee Cook states that Small contains evidence of emulsion slurry representing an abrasive-containing slurry and furthermore that the Kaufman article cited within Small provides additional compelling evidence that the term "slurry" does not include abrasive-

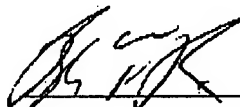
free etching solutions. Therefore, since Small only oxidizes the metal surface and relies upon an abrasive-containing emulsion slurry for polishing, the combined references fail to disclose an abrasive-free slurry for polishing and removing copper. Thus, since the combined references fail to disclose an abrasive-free slurry for polishing and removing copper, Applicants respectfully submit that the combined references fail to disclose or suggest claims 1 to 4, as amended earlier.

Applicants respectfully submit that the application is in proper form for allowance. If a telephone call would expedite prosecution, please call Applicants' attorney at (302) 283-2136. If the USPTO elects to maintain the rejection, Applicants respectfully request that the Examiner enter the declaration for purposes of appeal.

Respectfully submitted,

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Date

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